

24. A process according to claim 14, characterised in that a further metallic film or one or more double layers of metallic film plus semi-permeable membrane are applied to the exterior of one or both of the semi-permeable layers, a final metallic film being optionally applied to the outermost semi-permeable membrane and all the further metallic films being perforated in the region of the through-opening.

25. A process according to claim 1, characterised in that one or more metallic films are produced from segments separate from one another, where preferably each segment is provided with or electrically conductively connected to at least one separate terminal.

26. A process according to claim 14, characterised in that at least one semi-permeable layer, preferably all the semi-permeable layers, is/are formed from polymer, preferably organic and preferably adherent polymer.

27. A process according to claim 14, characterised in that the perforations are produced with a diameter or maximum diameter ranging between 0.1 and 50  $\mu\text{m}$ , preferably 1 and 10  $\mu\text{m}$ .

28. A process according to claim 14, characterised in that the semi-permeable layer(s) is/are applied by a spin-off process, centrifugal or fluidized-bed coating, or spin- or jet coating.

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29. A process according to claim 14, characterised in that chemical wet-etching, plasma dry-etching, electro-erosion or thermal melting-out is employed as means of forming the through-opening(s).

30. A process according to claim 14, characterised in that all or a part of the perforations are formed by photolithography in association with dry- or wet etching or by means of laser- or particle beam processing.

31. A process according to claim 14, characterised in that all the metallic films or a part of the metallic films is/are applied by sputtering, vapour deposition, plating, electrolytic deposition or current-free electrolytic deposition.

32. A process according to claim 14, characterised in that the membrane is produced as an ultra-thin membrane with a thickness ranging between 20  $\mu\text{m}$  and 100 nm.

33. Use of the sensor- and/or separating element formed in accordance with claim 1 or produced in accordance with claim 14 as sub-element for the detection of electromagnetically active molecules.

34. Use of the sensor- and/or separating element formed in accordance with claim 1 or produced in accordance with claim 14 for the separation of molecules through the semi-permeable layer(s).

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